

1 ¹³~~24~~ (Amended) A method as in claim ¹²~~23~~, wherein at least five dental
2 positioning appliances having receptacles are successively placed over the dental feature.

1 ¹⁴~~25~~ (Amended) A method as in claim ¹²~~23~~, wherein at least ten dental
2 positioning appliances having receptacles are successively placed over the dental feature.

1 ¹⁵~~26~~ (Amended) A method as in claim ⁹~~19~~, wherein the dental
2 positioning appliances apply an extrusive force to the attachment device.

1 ¹⁶~~27~~ (Amended) A method as in claim ⁹~~19~~, wherein the dental
2 positioning appliances apply a rotational force to the attachment device.

Please cancel claims 28-37.

REMARKS

Claims 1-37 were pending and were examined. Applicants gratefully acknowledge the indicated allowability of claims 2-4, 7-9, 12, and 22-25. The claims have been amended and canceled as noted above. Reexamination and reconsideration of the claims, as amended, are respectfully requested.

Claims 22-25 and 30-32 were rejected for indefiniteness. Such rejection has been overcome by correcting the language from claim 22 (which has now been incorporated into independent claim 19) to recite that "at least a second dental positioning appliance" is positioned over the dental feature. Claim 23 has correspondingly been amended to recite that it is the "third dental positioning appliance" which is additionally positioned over the dental feature. Applicants believe that these changes correct the errors which occurred in the claims as filed and apologize for any inconvenience caused to the Examiner.

The rejection of claim 30 is now moot since this claim has been canceled.

The rejections raised over the art will be discussed in the order in which they were raised. The rejection of independent claim 1 as being anticipated by Abbatte et al. '039 has been overcome by incorporating the limitations of dependent claim 3 into independent claim 1. As the Examiner has indicated that dependent claim 3 defines patentable subject matter, it is now believed that independent claim 1, as well as claims 2 and 4 dependent thereon, are in condition for allowance.

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The rejection of claims 15-18 over Abbatte et al. '039 is moot as these claims have now been canceled.

The rejection of independent claim 19 over Abbatte et al. '039 has been overcome by incorporating the limitation of dependent claim 22 (slightly modified as discussed above) in to claim 19. As the Examiner has indicated that claim 22 defines allowable subject matter, it is believed that claims 19-21 and 23-27 are now in condition for allowance.

The rejection of claims 28-31 and 33-37 over Abbatte et al. '039 are now moot since these claims have been canceled.

The rejection of independent claim 5 as being anticipated by the Lemchen '405 patent is respectfully traversed.

Independent claim 5 requires three steps to produce a digital model. First, a digital model of at least one dental feature is provided. Second, a digital model of one at least attachment device is provided. Third, the digital model of the attachment device is positioned on the digital model of the dental feature to produce a combined computerized model. The Lemchen '405 patent fails to teach the latter two steps.

Lemchen '405 does teach the provision of a digital model of at least one dental feature. See, col. 3 where the calculation of a "finish" position for a patient's teeth is described. The method of Lemchen '405, however, then goes on to calculate the placement position for a bracket or other orthodontic appliance on the modified teeth. As described from col. 3, line 62 through col. 4, line 26, it is the "shape of a bracket positioning jig" which is determined, not the positioning of digital models of an attachment device on the digital model of the dental feature.

Nor is the third claim step present. Lemchen '405 produces a model of a positioning jig. Nowhere is it suggested (nor would it be expected) that the positioning jig would comprise or be in any way equivalent to the "combined computerized model" set forth in claim 5 herein.

For these reasons, Applicants respectfully request that the rejection of claim 5 be withdrawn.

Independent claim 6 was rejected over "U.S. Patent No. 5,971,554 to Abbatte et al." in view of Lemchen '405. As an initial matter, Applicants note that U.S. Patent No. 5, 971,554 was never made of record in this case and, in fact, is a patent naming Paul Henion as inventor and relating to rear view mirror assemblies for

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automobiles. Applicants are unsure whether this rejection was actually meant to be stated over the Abbatte et al. '039 patent or over the Sondhl et al. patent which has no. 5,971,754. Applicants will assume that reference to the Abbatte et al. '039 was intended since it generally relates to using a mold to form a positioner, which seemed to be the gist of the rejection. If this assumption is incorrect, clarification is requested.

Applicants respectfully traverse the rejection, or at least what they think is the rejection. Claim 6 sets forth a method comprising four steps, at least two of which are neither described by nor suggested by the cited art. Step one recites "providing a combined digital model of at least one dental feature having at least one attachment device." The Abbatte et al. '039 is entirely unrelated to digital models. The Lemchen '405 at best teaches preparation of a digital model of a patient's dentition, but as discussed above, nowhere suggests combining such a digital model with a model of a bracket or other attachment. Lemchen teaches only use of the digital tooth model to determine bracket placement information which is then used to prepare a bracket placement jig. While such an approach might be useful for placing attachment devices of the type taught in Abbatte et al. '039, it is simply not the approach which is set forth in claim 6.

Moreover, neither Abbatte et al. '039 nor Lemchen '405 teach the production of "a mold from the combined digital model, wherein the mold has the attachment device on the surface thereof." Abbatte et al. '039 produces a mold by quite conventional techniques where the attachments are glued to a physical model of the teeth. Lemchen '405, in contrast, never teaches the production of a mold, but instead teaches the production of a jig which is used to place brackets by conventional adhesive techniques. Thus, the step of producing a mold from the combined digital model is absent, even when the references are combined as suggested by the Examiner.

For these reasons, the rejection of claim 6 is respectfully requested. Finally, the rejection of claim 13 is moot in view of the cancellation of this claim.

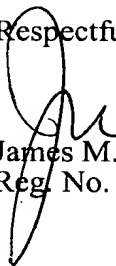
In view of the above amendments and remarks, Applicants respectfully submit that all remaining claims are now condition for allowance and request that the application be passed to issue at an early date.

Attached is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned with "VERSION WITH MARKINGS TO SHOW CHANGES MADE."

As a final matter, Applicants are submitting a Substitute Declaration claiming the benefit under 35 USC 120 of several additional patent applications and patents from two different lines of patents which were pending on the day that the present application was filed. The first paragraph on page 1 of the application has been amended accordingly.

If for any reason the Examiner believes that a telephone conference would in any way expedite prosecution of the subject application, the Examiner is invited to telephone the undersigned at 650-326-2400.

Respectfully submitted,


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VERSIONS WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

This application claims the benefit of provisional application no. 60/110,881, filed December 4, 1998. This application is also a continuation-in-part of application no. 09/466,353, filed December 17, 1999, which was a continuation of PCT/US98/12861, filed June 19, 1998, which was a continuation-in-part of application no. 08/947,080, filed on October 8, 1997, now U.S. Patent No. 5,975,893, which claimed the benefit of provisional application no. 60/050,342, filed on June 20, 1997. This application is also a continuation-in-part of application no. 09/250,962, filed on February 16, 1999[8], [and this application also claims the benefit of provisional application no. 60/110,881, filed December 4, 1998, the full disclosures of which are incorporated herein by reference.] now U.S. Patent No. 6,183,248, which claimed the benefit of provisional application no. 60/110,189, filed on November 30, 1998. This application is also a continuation-in-part of application no. 09/169,034, filed on October 8, 1998, which was a continuation-in-part of application no. 08/947,080, filed on October 8, 1997, now U.S. Patent No. 5,975,893, which claimed the benefit of provisional application no. 60/050,342, filed on June 20, 1997. The full disclosures of each of these applications are incorporated herein by reference.

IN THE CLAIMS:

- 1 1. (Amended) A method for producing a dental positioning appliance
- 2 which is removably attachable to at least one dental feature to effect or enhance dental
- 3 positioning, said method comprising:
- 4 providing a mold of dental features wherein the mold has at least one
- 5 attachment device mounted or formed on a surface of the mold;
- 6 forming the dental appliance over the mold with the attachment device;
- 7 [and]
- 8 removing the dental appliance from the mold, wherein the appliance has a
- 9 receptacle corresponding to the attachment device and tooth receiving cavities
- 10 corresponding to the dental features of the mold;

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11 providing additional structures in the mold of dental features, wherein the
12 structures provide a guide to demarcate a portion of the appliance in a desired location;
13 and
14 altering a portion of the appliance demarcated by the structure.

Please cancel claim 3.

1 4. (Amended) A method as in claim 1 [3], wherein the altering step
2 comprises cutting out the portion of the appliance demarcated by the structure, whereby a
3 window is created to expose the underlying dental feature.

Please cancel claims 10-18.

1 19. (Amended) A method for moving teeth, said method comprising:
2 securing an attachment device on a dental feature; **[and]**
3 removably positioning a first dental positioning appliance over the dental
4 feature wherein the appliance comprises an elastic polymeric shell having a cavity which
5 receives the dental feature and a receptacle which receives the attachment device; and
6 removably positioning at least a second dental positioning appliance over
7 the dental feature, wherein the second dental positioning appliance comprises an
8 elastomeric shell having a cavity which receives the dental feature and a receptacle which
9 receives the attachment device, wherein at least one of the receptacle and the cavity has a
10 different configuration than that of the first dental positioning appliance.

1 20. (Amended) A method as in claim 19, wherein the appliances apply
2 **[applies]** repositioning force to the attachment device.

1 21. (Amended) A method as in claim 19, wherein the appliances are
2 **[is]** anchored with the attachment device and apply **[applies]** a repositioning force to
3 another dental feature.

Please cancel claim 22.

1 23. (Amended) A method as in claim 19 [22], further comprising
2 removably positioning at least a third dental positioning appliance over the dental feature,
3 wherein the third **[second]** dental positioning appliance comprises an elastomeric shell

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4 having a cavity which receives the dental feature and a receptacle which receives the
5 attachment device, wherein at least one of the receptacle and the cavity has a different
6 configuration than that of the first and second dental positioning appliances.

1 24. (Amended) A method as in claim 23, wherein at least five dental
2 positioning appliances having receptacles are successively placed over the dental feature.

1 25. (Amended) A method as in claim 23, wherein at least ten dental
2 positioning appliances having receptacles are successively placed over the dental feature.

1 26. (Amended) A method as in claim 19, wherein the dental
2 positioning appliances apply **[applies]** an extrusive force to the attachment device

1 27. (Amended) A method as in claim 19, wherein the dental
2 positioning appliances apply **[applies]** a rotational force to the attachment device.

Please cancel claims 28-37.

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